IN THE CLAIMS:

1. (Currently Amended) A motor controller, comprising:

a synchronous motor <u>including stator windings and a rotor</u>;

a feed back detector ~~mounted on said synchronous motor for detecting~~ <u>that detects</u> a position and a velocity of [[a]] <u>the</u> rotor <u>and produces an output signal</u> ~~of said synchronous motor~~;

<u>a</u> magnetic pole position <u>detector</u> ~~detection means for detecting~~ <u>that determines</u> a magnetic pole position of the rotor ~~of said synchronous motor from~~ <u>based, at least on part, on</u> the output signal ~~of said feed back detector~~;

<u>a power control apparatus</u> ~~inverter means for controlling~~ <u>that controls</u> ~~an~~ electric power ~~to be~~ supplied to said synchronous motor according to said <u>detected</u> magnetic pole position ~~detected by said magnetic pole position detection means~~;

<u>a</u> magnetic pole position <u>estimator</u> ~~estimation means for estimating~~ <u>that estimates</u> the magnetic pole position of the rotor ~~of said synchronous motor~~ from ~~the~~ <u>an</u> induced voltage of <u>the</u> stator windings ~~of said synchronous motor~~; and

<u>a</u> magnetic pole position abnormality <u>detector</u> ~~detection means for detecting~~ <u>that 1) an</u> ~~abnormality of said feed back detector by always comparing~~ <u>compares</u> said <u>detected</u> magnetic pole position ~~detected by said magnetic pole position detection means~~ and the estimated magnetic pole position ~~estimated by said magnetic pole position estimation means~~ <u>and 2) determines that the said feed back detector is abnormal when an absolute value of the difference between said detected magnetic pole position and the estimated magnetic pole position is larger than a predetermined value;</u>

wherein, when <u>an</u> ~~said magnetic pole position abnormality detection means detects the~~ abnormality of said feed back detector <u>is determined</u>, said <u>power control apparatus</u> ~~inverter means~~ controls the electric power ~~to be supplied to said synchronous motor~~ according to said estimated magnetic pole position ~~obtained by said magnetic pole position estimation means~~.

2. Cancelled

3. (Currently Amended) The motor controller according to claim ~~2~~ <u>1</u>, wherein ~~in the case where~~ said feed back detector is an encoder~~, said magnetic pole position detection means calculates a mechanical angle of the encoder from the output signal of the encoder, and calculates an electrical angle representing the position of the magnetic pole from the obtained mechanical angle~~.

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4. Cancelled

5. Cancelled

6. (New)   The motor controller according to claim 3, wherein said magnetic pole position detector calculates a mechanical angle of the encoder from the output signal, and calculates an electrical angle representing the position of the magnetic pole from the mechanical angle.

7. (New)   The motor controller according to claim 6, wherein said magnetic pole position estimator calculates a correlated voltage from the induced voltage of said stator windings, calculates a non-loaded estimated electrical angle from the correlated voltage, and calculates a loaded electrical angle from the estimated electrical angle.

8. (New)   The motor controller according to claim 7, wherein the motor controller further comprises a velocity calculator that calculates a real angular velocity of said synchronous motor from the loaded electrical angle and the number of magnetic poles of the rotor.

9. (New)   The motor controller according to claim 8, wherein when said magnetic pole position abnormality detector determines that said feed back detector is abnormal, said loaded electrical angle is inputted to said velocity calculator and the real angular velocity is inputted to said power control apparatus.

10.(New)   The motor controller according to claim 1, wherein said power control apparatus comprises an inverter.

11. (New)   A method of operating a motor controller including a synchronous motor having stator windings and a rotor, the method comprising:
  (A) detecting a position and a velocity of the rotor and producing an output signal;
  (B) determining a magnetic pole position of the rotor from the output signal;
  (C) controlling electric power supplied to said synchronous motor according to said detected magnetic pole position;
  (D) estimating the magnetic pole position of the rotor from an induced voltage of the stator windings;

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(E) comparing said detected magnetic pole position and the estimated magnetic pole position;

(F) determining that the feed back detector is abnormal when an absolute value of the difference between the detected magnetic pole position and the estimated magnetic pole position is larger than a predetermined value; and

(G) controlling the electric power according to the estimated magnetic pole position when an abnormality of the feed back detector is determined.

12. (New)   The method as recited in claim 11, wherein said feed back detector comprises an encoder, wherein step (B) further comprises:

calculating a mechanical angle of the encoder from the output signal; and

calculating an electrical angle representing the position of the magnetic pole from the mechanical angle.

13. (New)   The method as recited in claim 12, wherein step (B) further comprises calculating a mechanical angle of the encoder from the output signal, and calculating an electrical angle representing the position of the magnetic pole from the mechanical angle.

14. (New)   The method as recited in claim 13, wherein step (D) further comprises calculating a correlated voltage from the induced voltage of said stator windings, calculating a non-loaded estimated electrical angle from the correlated voltages, and calculating a loaded electrical angle from the estimated electrical angle.

15. (New)   The method as recited in claim 14, further comprising the step of calculating a real angular velocity of said synchronous motor from said loaded electrical angle and the number of magnetic poles of the rotor.

16. (New)   The method as recited in claim 15, further comprising the step of inputting the loaded electrical angle to the velocity calculator and inputting the real angular velocity to the power control apparatus in response to determining that the feed back detector is abnormal.

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